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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Song Chen

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EXAMINER

NGUYEN, VAN H

ART UNIT

PAPER NUMBER

2194

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/828,381	Applicant(s) CHEN ET AL.	
	Examiner VAN H. NGUYEN	Art Unit 2194	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 March 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41, 43, 45, 46 and 48-74 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12, 23, 24, and 40 is/are allowed.
- 6) ☒ Claim(s) 1-11, 13-22, 25-39, 41, 43, 45, 46 and 48-74 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is responsive to the amendment filed 07/28/2008.

Claim 74 has been added. Claims 1-43, 45, 46, and 48-74 are currently pending in this application.

Applicant is required to cancel non-elected claim 42 in the next response to this Office Action.

Claim Objections

2. Claims 5 and 7 are objected to because of the following minor informalities:

"said selected communication protocol" should read *"said communication protocol"*.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1-11, 53, 54, 56, 62, 68, and 74 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claim 1, “*said object-oriented virtual machine interface*” lacks antecedent basis.

Claim 1 has no “*an object-oriented virtual machine interface*” term that defines or supports the given reference.

As to claim 74, “*said reconfigurable wireless network communication apparatus*” lacks antecedent basis. Claim 74 has no “a reconfigurable wireless network communication apparatus” term that defines or supports the given reference.

Dependent claims 2-11 and 53, 54, 56, 62, and 68 are rejected for fully incorporating the deficiencies of their base claim.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 43, 45, 60, 66, and 72 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Specification does not explicitly describe nor is sufficiently clear for one of ordinary skill in art to recognize the feature “*each kernel ... is capable of running simultaneously with any of the plurality of kernels*” in independent claim 43 as amended by Applicant in the amendment filed 08/02/2007.

The Examiner could not locate the details of the feature “*each kernel ... is capable of running simultaneously with any of the plurality of kernels*” in the specification.

Dependent claims 45, 60, 66, and 72 are rejected for fully incorporating the deficiencies of their base claim.

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

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Claims 13-22, 25-29, 35-39, 41, 43, 45, 46, 48-52, 55, 57-61, 63-67, and 69-74 are rejected under 35 U.S.C. § 103(a) as being unpatentable over **Sharrit et al.** (U.S. Patent 5,999,990) in view of **Ohtsuki** (U.S. Patent 5101346 A).

As to claim 13:

Sharrit teaches a reconfigurable system comprising virtual machine interface, a virtual machine and a separate reconfigurable apparatus (Figs. 1-7);

the reconfigurable apparatus (communicator 10) coupled to the virtual machine and comprising a plurality of hardware kernels (configurations of reconfigurable resource units RRUs); and the virtual machine interface coupled to the virtual machine and comprising a plurality of software objects (library of configuration files) including a first subset of the software objects (one set / different set of processing functions), a change to a software object (new / updated configuration files, col. 4, lines 14-15) in the first subset of the software objects results in a change in the hardware kernel (RRUs restructure themselves in accordance with the configuration information) associated with the software object [See col. 1, line 54 - col. 2, line 58. It is noted that a set of RRUs with its respective configuration form a kernel which typically is a collection of system management functions].

Sharrit does not explicitly disclose each software object in the first subset of the software objects associated with a different hardware kernel in the plurality of hardware kernels.

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Ohtsuki teaches each software object in the first subset of the software objects associated with a different hardware kernel in the plurality of hardware kernels (see the Abstract and col.2, lines 10-45).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Sharrit with Ohtsuki because would have dynamically allocated hardware kernels based on current system requirements and dynamically altered hardware kernels during operation for performing any of a variety of processing tasks.

As to claim 14:

Sharrit teaches the plurality of software objects includes a second subset (library of configuration files) of the software objects, each software object in the second subset of the software objects having at Least one adjustable attribute (new / updated configuration files, one set / different set of processing functions) [Col. 1, line 54 - col. 2, line 58].

As to claim 15:

Sharrit teaches at Least one adjustable 'attribute is a static or dynamic attribute (dynamically altered processing) [Col. 1, lines 56-59].

As to claim 16:

Sharrit an application program interface comprising a plurality of software routines (API of classes), each software routine in said plurality of software routines representing a

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different communication protocol (machine models), wherein said plurality of software routines comprise software calls to said plurality of software objects (API); and an application program comprising software calls to said plurality of software routines (application layer 140). [Col. 5, line 23 - col. 6, line 64].

As to claims 17 and 20:

Sharrit teaches compiling functionality (linkage functionality, col. 5, lines 56-57).

Therefore, it would have been obvious to use a compiler to provide such functionality.

Further, JIT compiler for JVM was well known at the time when the present application was filed. Translating is a default function of a typical compiler.

As to claims 18 and 21:

Sharrit teaches resource allocator (resource allocation unit) configured to receive the machine-readable instructions and issue a signal/command to configure a hardware kernel in the plurality of hardware kernels [Col. 7, lines 14-67].

As to claim 19:

Sharrit teaches program for utilizing a plurality of software objects [Col. 5, lines 2-57].

As to claims 22 and 55:

Sharrit teaches a software object in said plurality of software objects is a searcher object, a code generation unit object (Linkage functionality, col. 5, lines 56-57), a finger object,

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an uplink object or a downlink object. Uplink and downlink are typical functions of wireless communication. It is noted that Sharrit teaches configuring the communicator to implement various functions of wireless communication. Therefore, it would have been obvious to implement uplink and downlink functions, with corresponding software objects, in Sharrit. It is also noted that the alternatives linked by "or" is interpreted as requiring only one alternative.

As to claims 25-28, CDMA and its variations: IS-95 CDMA, IS-95B CDMA, CDMA TIA IS2000, TIA IS 2000A, WCDMA, cdma2000, and ARIB WCDMA, and TDMA and its variations such as IS-136 TDMA are well known wireless communication protocols. It would have been obvious to support these protocols/configurations in the communicator of Sharrit.

As to claims 51-52:

Sharrit teaches one software object objects is associated with at least two kernels and at least two kernels are associated with one software object in that one application can output to more than one devices and more than one application can access the same device [See col. 1, line 54 - col. 2, line 58 and col.4, lines 18-47].

As to claim 57:

Sharrit teaches “dynamically reconfigured RRUs”, col. 10 lines 46-50 that correspond to the recitation of the kernels are configured for different parameters dynamically.

As to claim 63:

Sharrit teaches the objects are updated according to the states of their associated kernels dynamically (new / updated configuration files -used to configure RRUs, col. 4 lines 14-57).

As to claim 69:

Sharrit teaches a change in a kernel of the plurality of kernels results in a change in the software object associated with that kernel (RRUs restructure themselves in accordance with the configuration information, col. 1, line 54 - col. 2, line 58).

As to claim 29:

The rejection of claim 13 is incorporated herein in full. Additionally, Sharrit further teaches reconfigurable multi-protocol communication (support new and modified signal formats, support wireline and wireless communications, col. 8, lines 45-51; col. 10, lines 46-50), interconnect structure and attribute value (see Figs. 6-7 and associated text).

As to claims 35 and 36:

Refer to claims 16 above for rejection.

As to claims 49-50:

Refer to claims 51 and 52 above for rejections.

As to claims 58, 64, and 70:

Refer to claims 57, 63, and 69 above, respectively, for rejections.

As to claim 37:

It is basically a program product claim of claim 29, thus note claim 29 for rejection. Note the equivalence of instantiating/creating.

As to claim 38:

Note discussion of claim 16 and the equivalence of the plurality of standards / plurality of protocols.

As to claim 39:

Search, code generation unit, finger, uplink and downlink objects are typical functions of wireless communication. Sharrit teaches configuring the communicator to implement various functions of wireless communication. Therefore, it would have been obvious to implement search, code generation, finger, uplink, and downlink functions, with corresponding software objects, in the system of Sharrit.

As to claim 41:

Refer to claims 25 above for rejection.

As to claims 59, 65, and 71:

Refer to claims 57, 63, and 69 above, respectively, for rejections.

As to claim 43:

The rejection of claim 13 is incorporated herein in full. The combination of Sharrit and Ohtsuki further teaches the parsing and producing steps (Ohtsuki, Figs. 2-3b and the associated text). Also, Ohtsuki teaches each kernel is designed to perform a specific processing function and is capable of running simultaneously with any of the plurality of kernels (col.3, lines 7-29 and col. 3, line 66-col.4, line 25).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Sharrit with Ohtsuki because would have dynamically allocated hardware kernels based on current system requirements and dynamically altered hardware kernels during operation for performing any of a variety of processing tasks.

As to claim 45:

Sharrit teaches function or procedure (processing functions) [See col. 1, line 54 - col. 2, line 58].

As to claims 60, 66, and 72:

Refer to claims 57, 63, and 69 above, respectively, for rejections.

As to claim 46:

Refer to claims 13 and 43 for rejection.

As to claim 48:

Refer to claim 45 above for rejection.

As to claims 61, 67, and 73:

Refer to claims 57, 63, and 69 above, respectively, for rejections.

As to claim 74:

Refer to claim 13 above for rejection.

Claims 1-11, 30-34, 53, 54, 56, 62, and 68 are rejected under 35 U.S.C. § 103(a) as being unpatentable over **Sharrit et al.** (U.S. Patent 5,999,990) in view of **Ohtsuki** (U.S. Patent 5101346 A) and further in view of **Savitzky et al.** (U.S. Patent 5,732,261).

As to claim 1:

The rejection of claim 13 is incorporated herein in full.

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While Sharrit provides a virtual machine interface (dynamically reconfigured RRU's) for the reconfigurable wireless (col. 10, lines 46-50) network communication apparatus (communicator), the combination of Sharrit and Ohtsuki does not teach that the plurality of software objects are packaged into an object-oriented virtual machine interface.

Savitzky teaches packaging the plurality of software objects (components / objects, col. 3, lines 60-63) into an object-oriented virtual machine interface (REST object-oriented application framework, col. 3, lines 33-55) for a reconfigurable (capable of communicating with almost any remote machine) network communication apparatus. Col. 5, lines 24-67.

It would have been obvious to package the plurality of software objects into an object-oriented virtual machine interface for the reconfigurable wireless network communication apparatus in Sharrit, as one skilled in the art would have combined the teaching of Savitzky with Sharrit as modified by Ohtsuki because Sharrit desires incorporating new services to reconfigure resources (col. 5, lines 52-57) and Savitzky provides a mechanism to do so (col. 21, line 65 - col. 22, line 8).

As to claims 2 and 3:

Refer to claims 14 and 15 above for rejections.

As to claim 4:

Sharrit teaches a hardware kernel in the plurality of hardware kernels is configurable in accordance with a communication protocol (transmit/receive signals into/from wireless communication channel) [Col. 2, lines 6-11].

As to claims 5-8:

Refer to claims 25-28 above for rejections.

As to claim 9:

Refer to claim 22 above for rejection.

As to claim 10:

Sharrit teaches a software object in the plurality of software objects is a matched filter object or a combiner object (combine RRs/functions, col. 8, lines 17-40). It is noted that the two alternatives linked by "or" is interpreted as requiring only one.

As to claim 11:

uplink and downlink are typical functions of wireless communication. Sharrit teaches configuring the communicator to implement various functions of wireless communication. Therefore, it would have been obvious to implement uplink and downlink functions, with corresponding software objects, in Sharrit.

As to claims 53-54:

Searcher, finger, and matched filter objects are typical functions of wireless communication. Sharrit teaches configuring the communicator to implement various functions of wireless communication. Therefore, it would have been obvious to implement searcher, finger, and matched filter functions, with corresponding software objects, in the system of Sharrit.

As to claims 56, 62, and 68:

Refer to claims 57, 63, and 69 above, respectively, for rejections.

As to claim 30:

Sharrit as modified by Savitzky teaches a hierarchical relationship (class hierarchies of the object-oriented framework) [col.6, line 65-col7, line 20].

As to claim 31:

Sharrit as modified by Savitzky teaches (Savitzky) an application Program (application layer) that includes software calls (APIs) to the plurality of software objects.

As to claims 32 and 34:

The reconfigurable hardware and software of the system of Sharrit as modified by Savitzky provides a virtual execution environment for each combination of application and communication protocols, i.e., providing a software virtual machine. Sharrit as

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modified by Savitzky teaches issuing an instruction for controlling a kernel in the plurality of kernels (controller, user).

Such instruction being issued from the software virtual machine/environment would have been an obvious choice in view of the system architecture of Sharrit as modified by Savitzky which interfaces a user and the system hardware resources.

As to claim 33:

Refer to claims 17 above for rejection.

Indication of Allowable Subject Matter

5. Claims 12, 23, 24, and 40 appears to be allowable over the prior art of record, subject to a final search.

Response to Arguments

6. Applicant's arguments filed 07/28/2008 have been considered but are moot in view of the new ground(s) of rejection.

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Conclusion

7. The prior art made of record, see PTO 892, and not relied upon is considered pertinent to applicant's disclosure. Applicant should review these references carefully before responding to this office action.

Contact Information

8. Any inquiry or a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: (571) 272-2100.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VAN H. NGUYEN whose telephone number is (571) 272-3765. The examiner can normally be reached on Monday-Thursday from 8:30AM-6:00PM. The examiner can also be reached on alternative Friday. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, HYUNG S. SOUGH can be reached at (571) 272-6799.

The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/VAN H NGUYEN/
Primary Examiner, Art Unit 2194

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